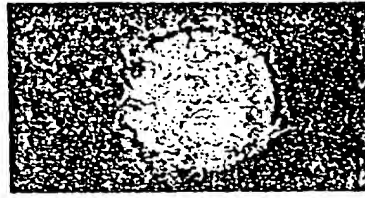


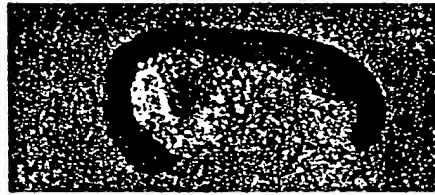
Figure 1

2(A)



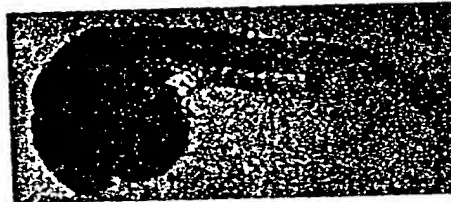
12 hpf

2(B)



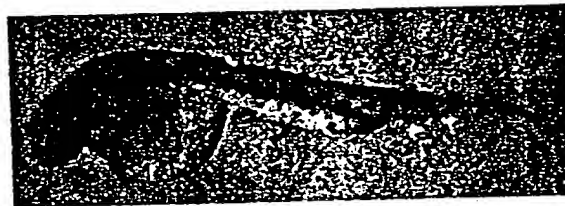
16 hpf

2(C)



24 hpf

2(D)



48 hpf

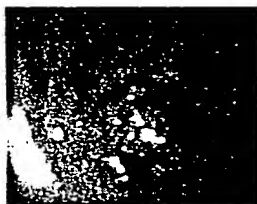
Figure 2 (A)-(D)

3(A)



H3 Antibody 24f

3(B)



upf Acridine Orange

Figure 3 (A)-(B)

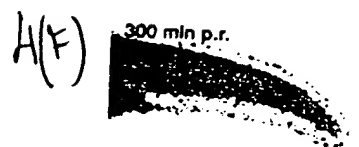
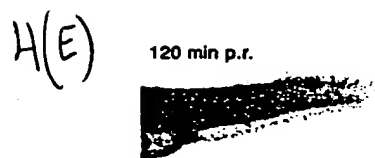
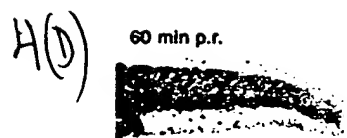
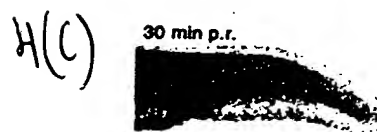
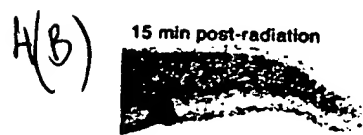
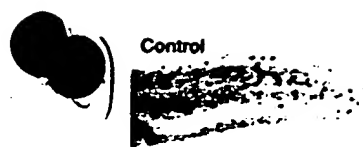
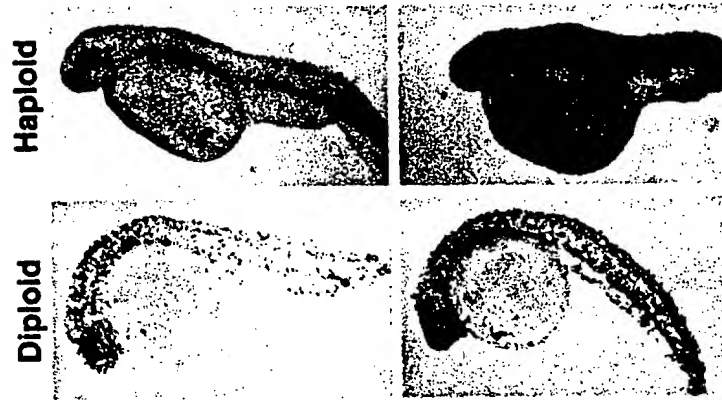


Figure 4 (A)-(F)

5

A Wild type SQW 226 Mutant



5

B



5

C

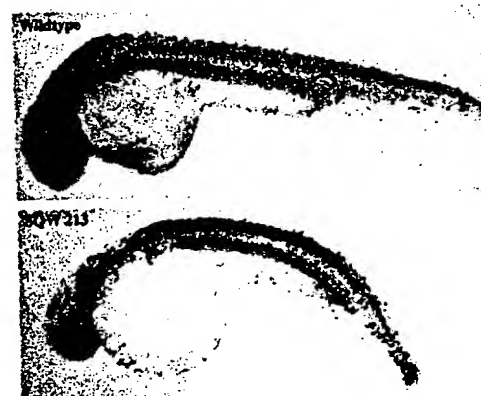
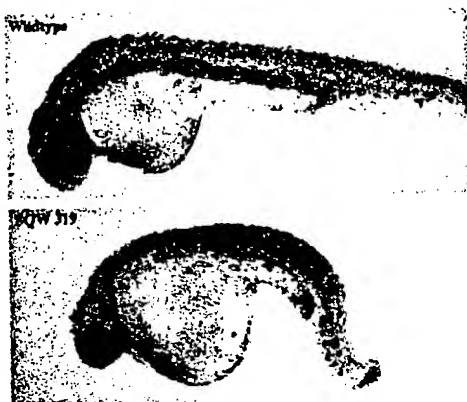
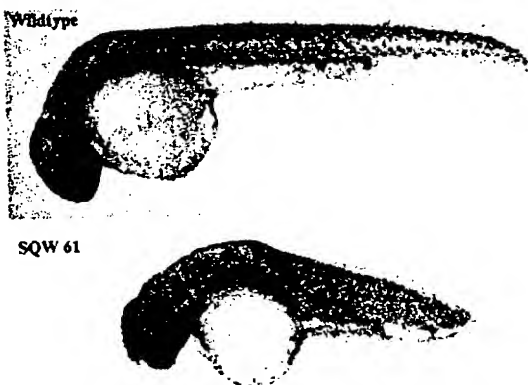


Figure 5 (A)-(C)

5 D



5 E



5 F

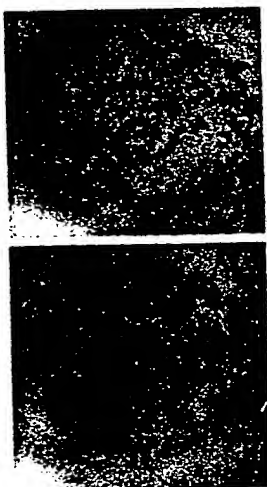
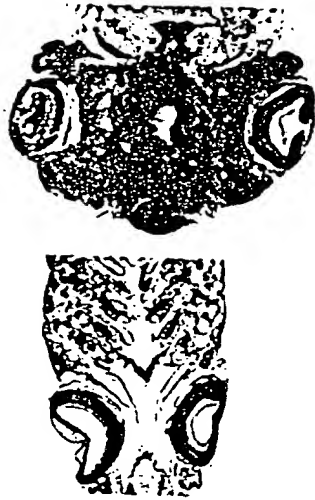


Figure 5 (D)-(F)

A



B

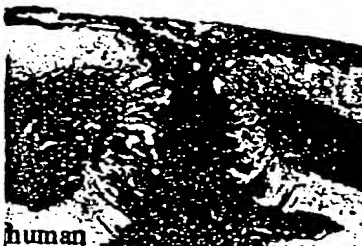


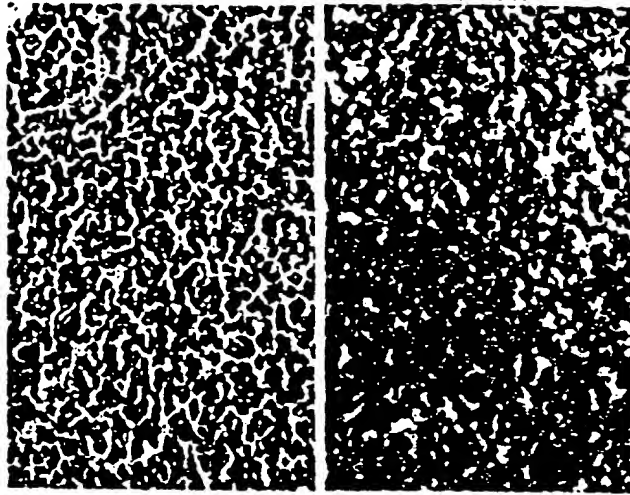
Figure 6 (A)-(B)

6

C

Zebrafish

Human



6

D

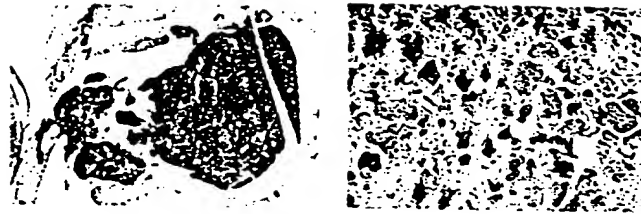


Figure 6 (C)-(D)

6 E

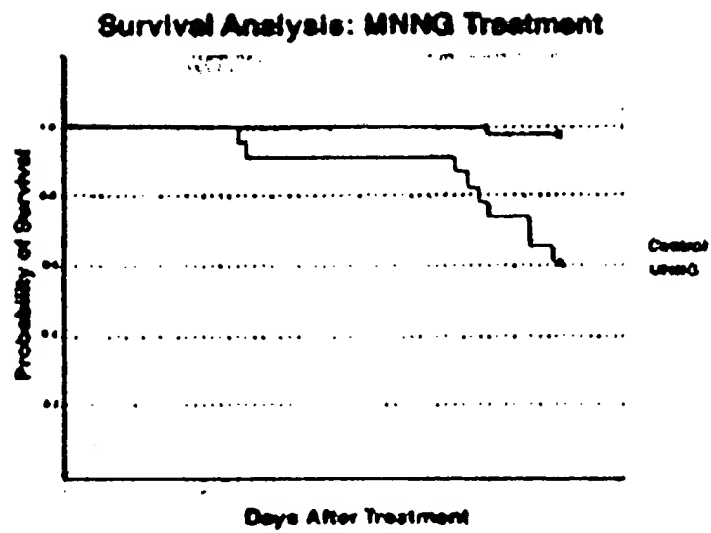
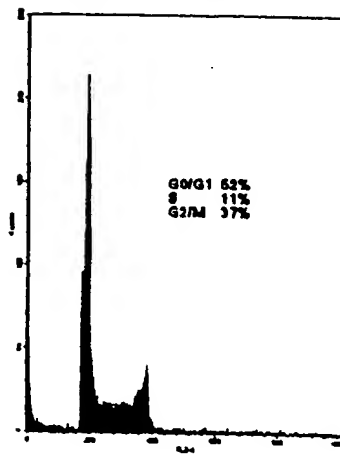


Figure 6 (E)

A

Single-Embryo FACS Analysis



B

FACS Analysis of Embryos after Ionizing Radiation

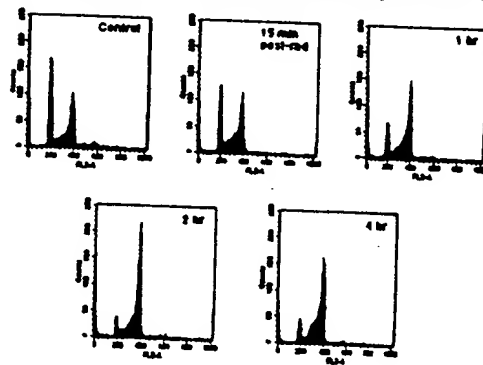
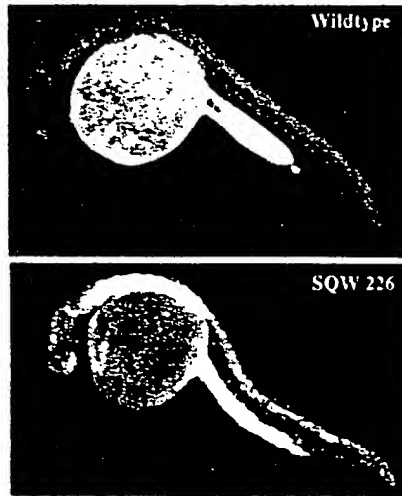


Figure 7 (A)-(B)

8 A



8 B

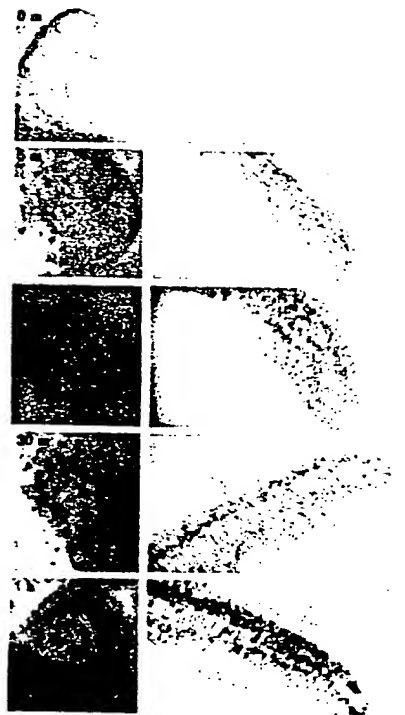


Figure 8 (A)-(B)

8 C



Figure 8 (C)

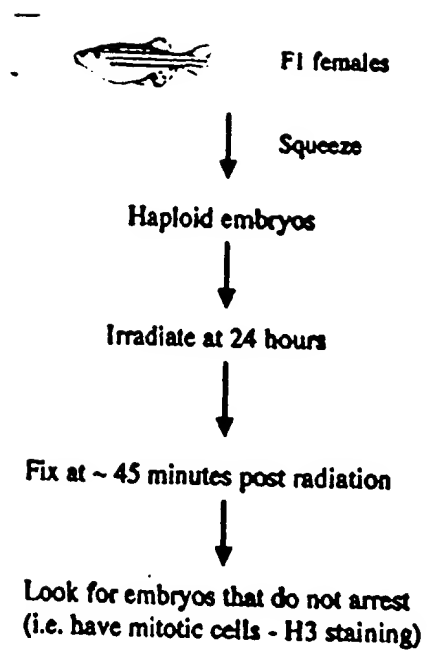


Figure 9

WT
non-irradiated



WT
irradiated



SQW 226
irradiated



Figure 10

Zfish MPPK--KRS SGTQCKELXGSLKRS SPCS GCH-----AVLSPERNKOKDZVFISEECSTNSICOMWRDNER 68
 Frog MPPKS PKK---QQIPSCGEPSSPCRP-----OFQDQPIFLCENKISCHVRCKAWNTYEX 53
 Human MPPKTPKXTAATAAAAAAEPAPPCPPPPPEECPECCSGPEOLPLVRLFEETEEETALCCCKPCCHVREAWLTKEX 80

Zfish EIRSNCK-TNMPYSHQCCGALFLTAQHELEGINLITFQFLKAVGLSYKQFISLVKXIVMYOTSPUNSVNTPLENY 147
 Frog MFPSGYMRE-TAXKXESLQLLTIASVOCEENTFITTELLKILRLSVNRCFRLRENTMCHVSNQCMNISKLKCY 132
 Human VSSVQGVLGQYEQKXELNCTITLAVCLDENSFITTELOQNIETISVHKFFMLKETDT-----STQCMNSPLKCY 155

Zfish OVTLAIYQRFVXITGCKLFAEPMA-----KRXELNESSITMFLAKGTFLCQEDVTSFLLCVLEFAKRLSSSL 220
 Frog ENMCLIFCKFCRIIFLFEFECHMT---RAAVDTAPILXGTITITFLARXILCQDELVTSFLLCVLOYFLILSPSSI 209
 Human OVLFAILFSKLERIGLILYLTQPS-SISTEINSALVLKVSITITFLAKCEVLQEDLVTSFLLCVLOYFLILSPSL 234

Zfish LQSPINSVSSSTLSPPTSTSPKQCKSKPR--PAEMDQLLETLCKEGQSVDBQWYQSTCAFLDSVGLLGLOGL 298
 Frog ILKEPKYKALNGLVNTPPSSSRSQNRNTRYSPQSSTDSKVLEFLCSQNYQPMDBPWTSTSVOLJASGISSNECIS 289
 Human ILKEPKYKAV--IPINGSPTPIPCQNRSAIAKQLENTRIEVLCKEHEQNDDBQWYKXELFVNSLGLVTSKGL 312

Zfish PMEALSKQYEELTHSKQDARLFLSCDETLSPNKKEVSKYEVTPRNLFADOLAIPMOTPLAATSTQCLRGCLTSG 378
 Frog KYESISQYEELTHSKQDARLFLSCDETLKVDQCSLOLERIPRKO--ESVFPVPPQIPVCAANTVQOLNLTSSA 367
 Human EYENLSKPYEELTHSKQDARLFLSCDETLQDSTIOSFETQTPRRNMLDEEVNVLPPHPTATANTQOLNLTSSA 392

Zfish SDQSSNMLVYXKCTQDSCEILKVEELGEVFIQREQAVCOHGEQLRKFFYLCAQLYKAMESLXSEERLSVQ 458
 Frog NOKSPOTLOSIFSHCTWPKTITDISHFGWKEKESSSVCCGAEIQYQYKLVGLYRMEALIKTEERLSVH 447
 Human SDQSSNMLVYXKCTQDSCEILKVEELGEVFIQREQAVCOHGEQLRKFFYLCAQLYKAMESLXSEERLSVQ 472

Zfish FSKLLNNAFHTSLACALVWLTIVGSSLKNGGFGPSSGASOSVESOLCFPHILSVFQLPDPYKVIKESFKAEPITL 538
 Frog FSKLLNNDHFHCLACALVWLTIVGSSLKNGGFGPSSGASOSVESOLCFPHILSVFQLPDPYKVIKESFKAEPITL 518
 Human FSKLLNNDHFHCLACALVWLTIVGSSLKNGGFGPSSGASOSVESOLCFPHILSVFQLPDPYKVIKESFKAEPITL 542

Zfish KXOYVHLECECEVIMESLAWADSPFLDILKQSR-EGPGECAEPPTANQPLMHHTAADYLSPVSPQRQ----- 510
 Frog TSNMIMLECECEVIMESLAWADSPFLDILKQSR-EGPGECAEPPTANQPLMHHTAADYLSPVSPQRQ----- 598
 Human TRSYVHLECECEVIMESLAWADSPFLDILKQSR-EGPGECAEPPTANQPLMHHTAADYLSPVSPQRQ----- 622

Zfish --P-PYMEAEPTP--GTRAPSSLSLFFYKMYRLAYLRUKYLSNLTSHPEEPDITLCTILOEYELMRCHLD 685
 Frog TSSVTNGQVSSSQPVQ---QKSTLSLFFYKMYRLAYLRUKYLSNLTSHPEEPDITLCTILOEYELMRCHLD 674
 Human NST-ANAETCATSAFQTCPLKSTLSLFFYKMYRLAYLRUKYLSNLTSHPEEPDITLCTILOEYELMRCHLD 701

Zfish QLEMSAHTAGMKIMDLPKNTVAYNELPNTNQETFRVLTREGQYOSIVFYHIFROKXHTILOYSPPFPPLSF 765
 Frog QIMYCSHTAGMKIMDLPKNTVAYNELPNTNQETFRVLTREGQYOSIVFYHIFROKXHTILOYSPPFPPLSF 754
 Human QIMYCSHTAGMKIMDLPKNTVAYNELPNTNQETFRVLTREGQYOSIVFYHIFROKXHTILOYSPPFPPLSF 781

Zfish IPHIPCSPIK--MSPLRPGSNMIVSPLSSRV-----SPLVITPSRIILSISGESEGSADQETNGVSSSONSL 837
 Frog IPHIPSPYRFGNSP-KMPC--NIVYSPLVTPYXTADGLLSPSKITPXTSFLISLGTSPSPQFTHGLNSCERPTD 831
 Human IPHIPSPYKFPSSPLRPGCH-IVISPLSPYXI SEGLPTPTKIPPSRIILSISGESEGSADQETNGVSSSONSL 860

Zfish RSLGGGSAPKPLKLRFDQGDADGSKS-SGESALQKLAESSSTFSVQCKLKEESCKXHP 904
 Frog RSDTGTPKPLKLRFDQGDADGSKMIGGESXFCQKLAESTSTIRVOCKLEESLESSQEEK 899
 Human RSEGSNPKPLKLRFDIEGSEADGSKMLPGESXFCQKLAESTSTIRVOCKMOSMOSMKEEK 928

904 SEQ ID NO: 1
 899 SEQ ID NO: 2
 928 SEQ ID NO: 3

Figure 11

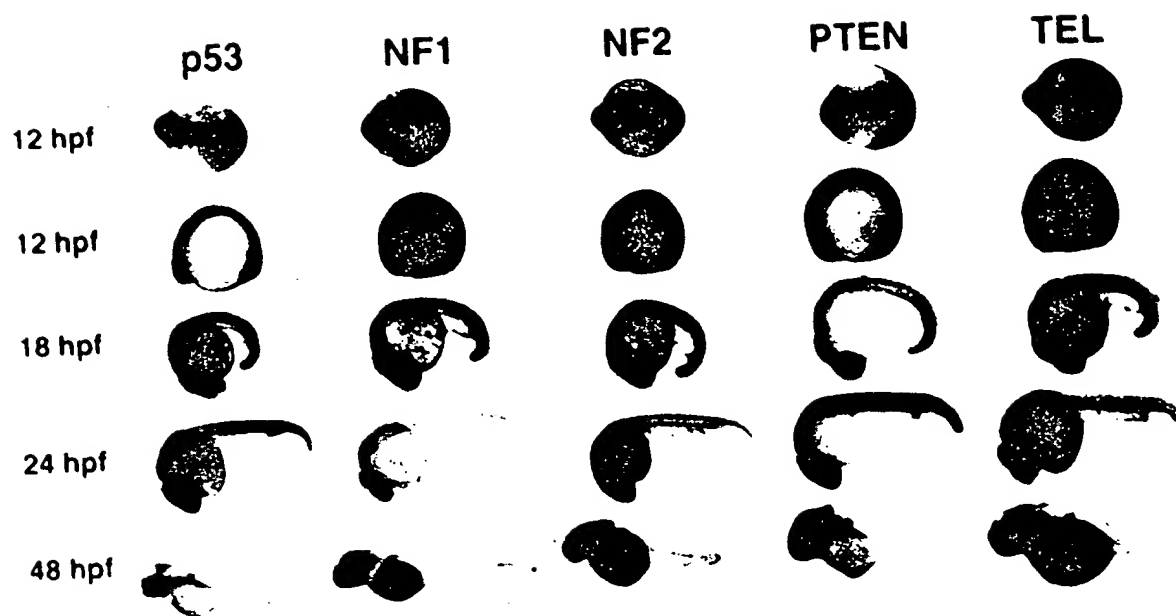


Figure 12

13A



13B



13C

SQW 213

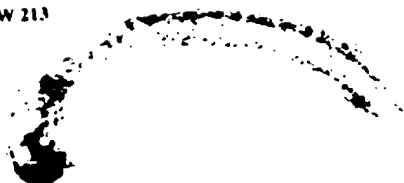
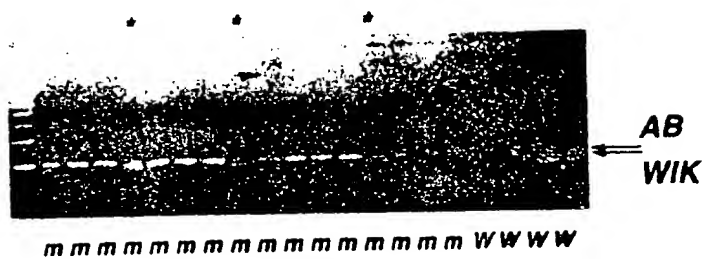


Figure 13 (A)-(C)

[illegible]

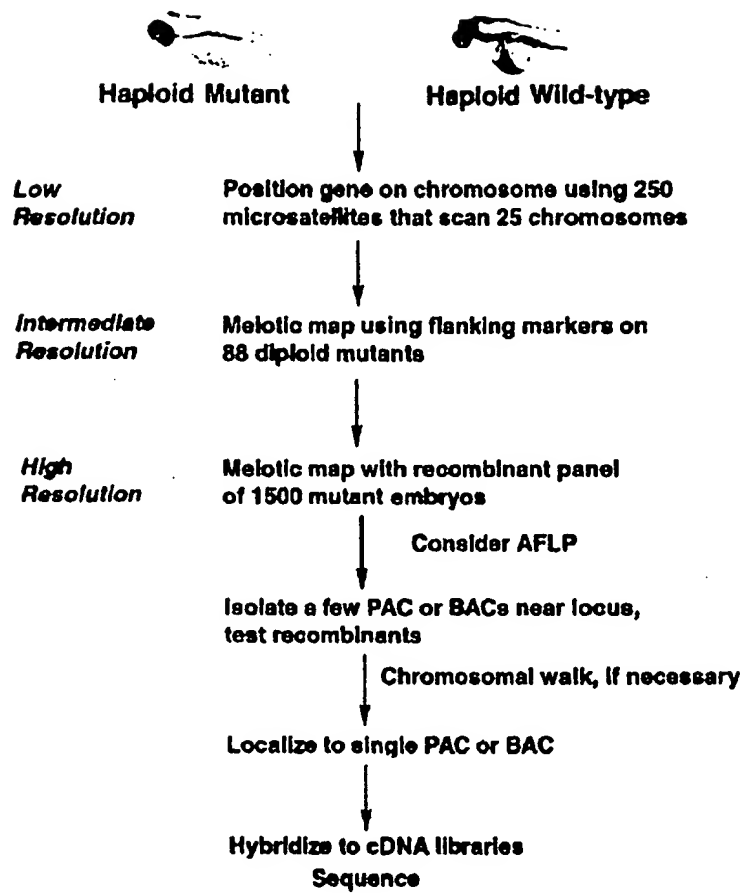
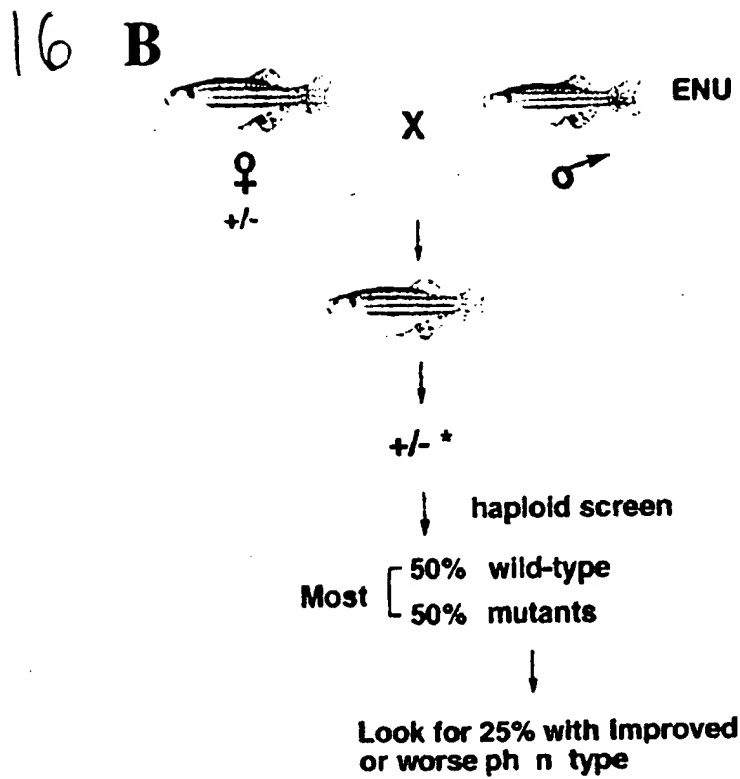
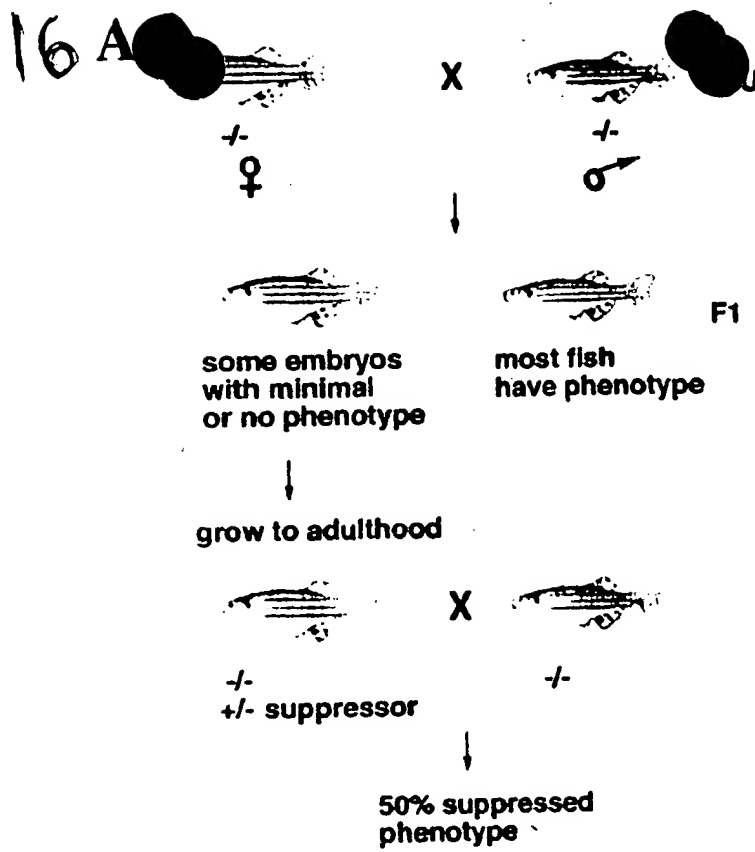
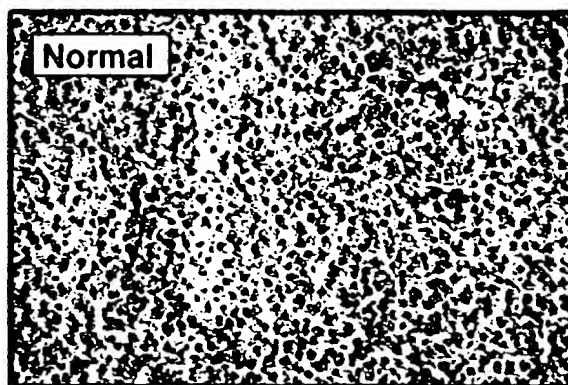


Figure 15

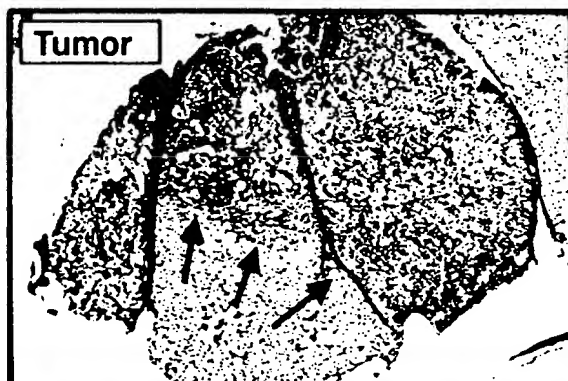


Figures 16 (A)-(B)

17 A



17 B



17 C

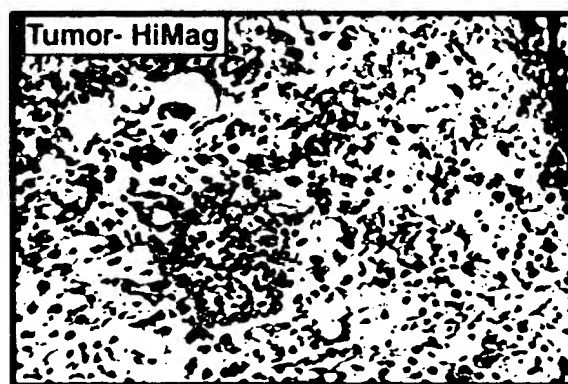
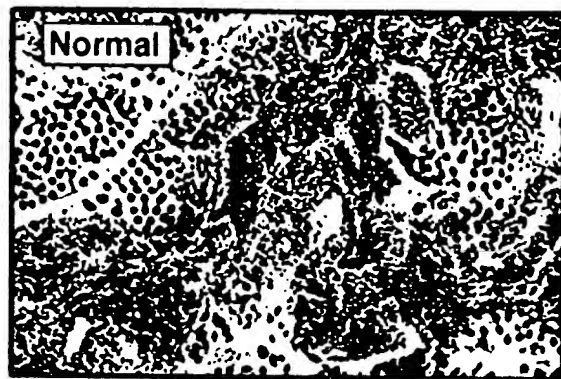
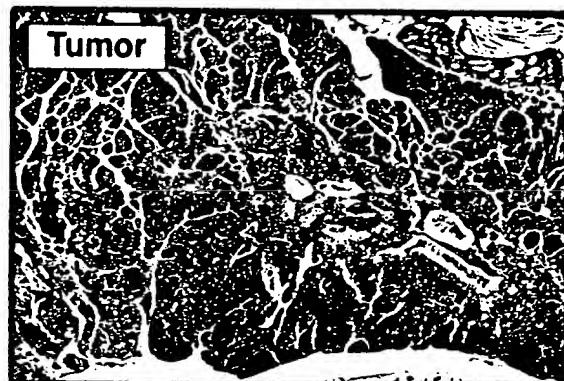


Figure 17 (A)-(C)

18 A



18 B

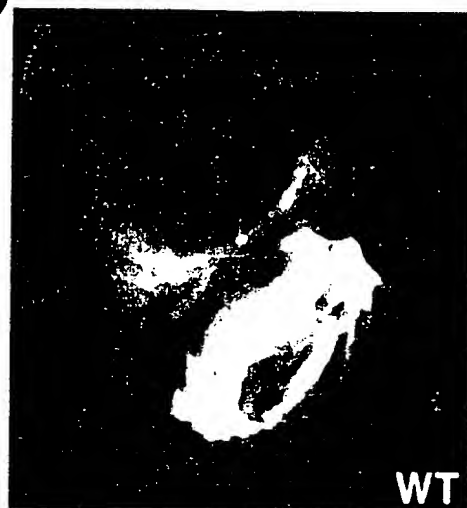


18 C



Figure 18 (A)-(C)

19 A



19 B



19 C



Figure 19 (A)-(C)

19 D



19 E

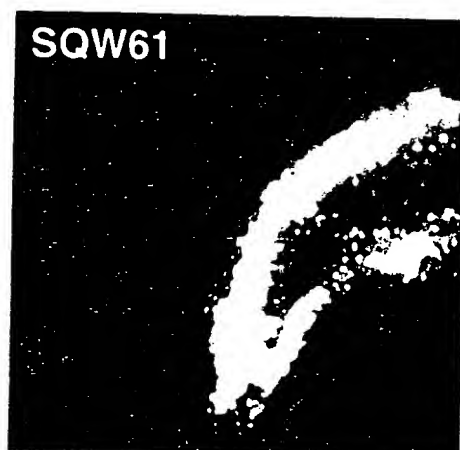


Figure 19 (D)-(E)

20 A



20 B



20 C



Figure 20 (A)-(C)

20

D

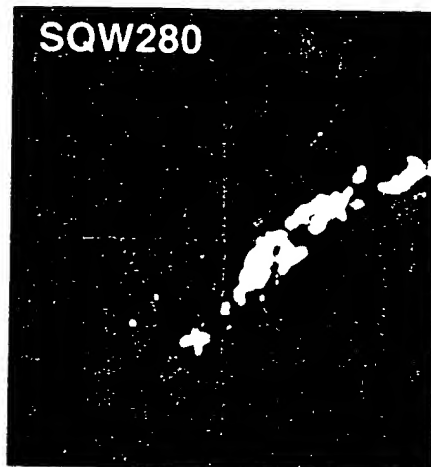
SQW226



20

E

SQW280



20

F

SQW319



Figure 20 (D)-(F)

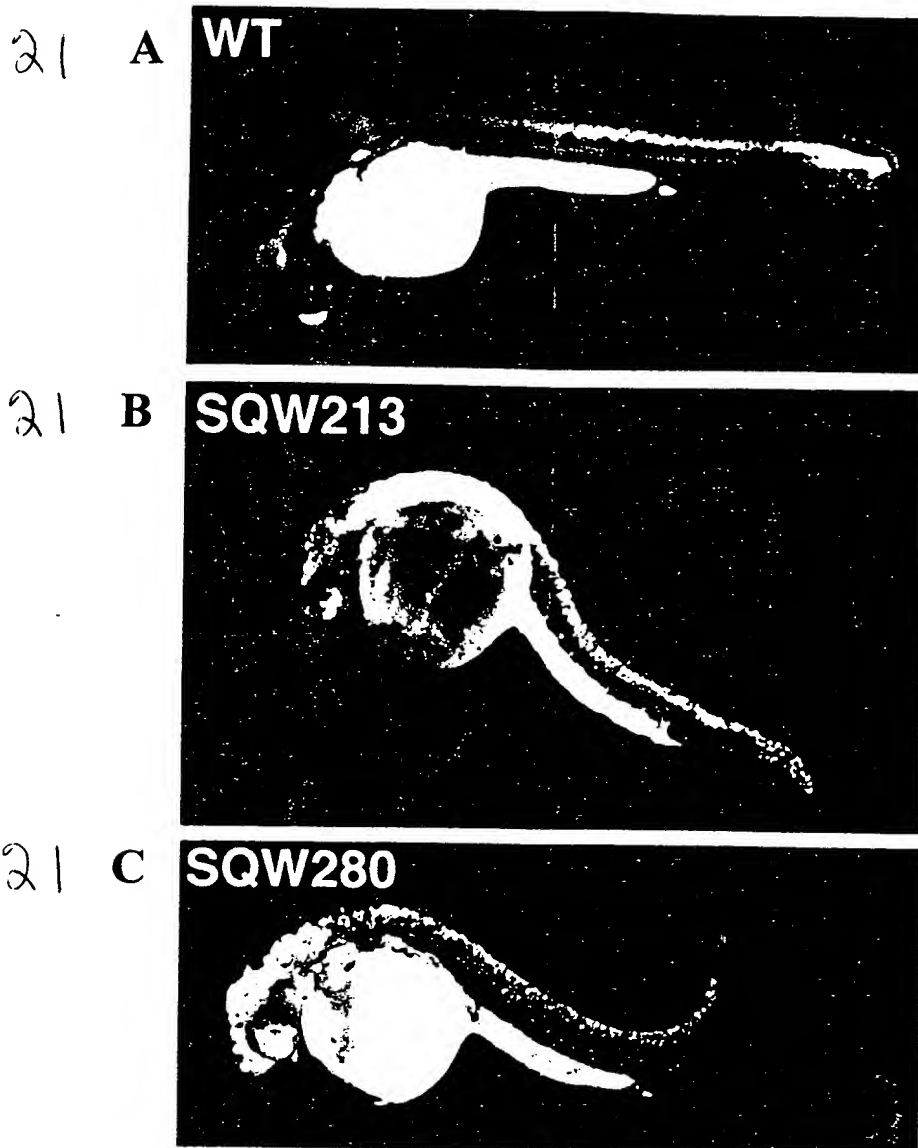
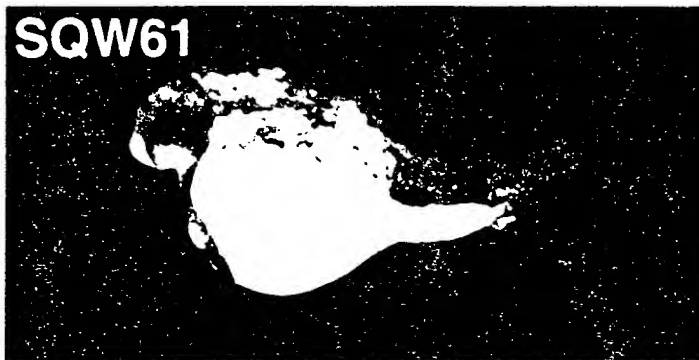


Figure 21 (A)-(C)

21 D



21 E



21 F



Figure 21 (D)-(F)